Section II (Remarks)

Claims 1-10 are pending. Claims 6, 7, 8 and 10 have been amended. No new matter is introduced.

As amended, four (4) independent claims are now presented. Accordingly, credit card authorization form directing payment for the payment of the fee for one (1) additional independent claim ($200.00 for large entity) is provided herewith. Please charge the $200.00 claim fee to the credit card identified in the enclosed credit card authorization form. No additional fees are believed to be due.

However, should any additional fees be required or an overpayment of fees made, please debit or credit our Deposit Account No. 08-3284 accordingly.

Acknowledgement of Allowability of Claims 6-10, and Rewriting of Same in Independent Form

The February 21, 2006 Final Office Action recited an objection to claims 6-10 as depending upon a rejected base claim, but indicated that claims 6-10 would be allowable if rewritten in independent form amended to include all of the limitations of the base claim and any intervening claims. Applicant has now amended the claims in appropriate independent form as noted below.

In particular, claims 6, 8 and 10 are now converted into independent form by now reciting the language from the base claim from which they originally depended (*i.e.*, base claim 1). Since claim 8 is now in independent form and claim 9 depends from claim 8, there is no need to further amend claim 9. This is because claim 9 (by its dependency on claim 8) incorporates all the language of base claim 8 now presented in independent form. Claim 7 has been amended to depend from claim 6 instead of from claim 1. These claim amendments are fully supported by the original specification and the original claims.

In view of the foregoing claim amendments, Applicant respectfully requests allowance of claims 6-10 as acknowledged in the Final Office Action.

Claims Rejection under 35 U.S.C. § 103(a), and Traversal Thereof

Claims 1-5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sorensen et al. (U.S. 5,782,974; hereinafter "Sorensen"), in view of Tanaka (U.S. 5,594,248) for the reasons noted at pages 2-3 of the Final Office Action.[1] Applicant respectfully traverses this rejection for the reasons noted below.

At the outset, claim 1 (and therefore claims 2-5 depending therefrom) recites the language "an infrared radiation source constructed and arranged to transmit an infrared radiation beam through the sampling region" at lines 2-4 thereof. See page 3 of this paper. For convenience, claim 1 is reproduced below with the foregoing claim language being highlighted in bold with underlining:

> 1. (Previously Presented) A semiconductor process system adapted for processing of or with a material therein, said system comprising: a sampling region for the material; **an infrared radiation source constructed and arranged to transmit an infrared radiation beam through the sampling region**; a thermopile detector constructed and arranged to receive infrared radiation after the transmission of the infrared beam through the sampling region and to responsively generate an output signal correlative of said material; and a process controller arranged to receive the output of the thermopile detector and to responsively control one or more process conditions in and/or affecting the semiconductor process system. [(Emphasis added in bold with underlining.)]

With regard to the above-noted emphasized claim language, Applicant notes the statement in the Final Office Action (at page 4, lines 4-5 thereof) that:

> Sorensen fails to show, with respect to claim #1, the transmission of the infrared beam through the sampling region. [(Emphasis added.)]

Applicant agrees with the foregoing statement that Sorensen "fails to show" any "transmission of the infrared beam through the sampling region." In order to rectify the foregoing deficiency of Sorensen, the Final Office Action attempts to rely on the teachings of Tanaka. In particular, the

[1] There are characterizations in the Final Office Action of the disclosures of Sorensen and Tanaka. To the extent any of those characterizations have not been discussed herein, Applicant disagrees with any such characterizations in the Office Action. For example, at page 3, lines 9-22, the Final Office Action states in effect that the process in Sorensen "operates on a material that is a gas, liquid, and then a solid" is incorrect because the infrared emissions detected ultimately by detector (18) from substrate (10) do not impinge on the plasma gas because those emissions from the backside of substrate (10) never come in contact with the plasma gas.

relevant language from the Final Office Action (appearing at page 4, lines 11-16 thereof) is reproduced below for convenience:

> It would have been obvious to one having ordinary skill in the art at the time the invention was made, with respect to **claim #1** [(bold emphasis in original)], to include the step having a transmission of a[n] infrared beam through the sampling region, into the method of Sorensen, as taught by Tanaka, with the motivation that having the infrared imaging system, when used to recognize[] a defective pixel detection mode in response to a predetermined signal supplied from an external source, produces a normal image signal that is free of defective image data from defective pixels. [(Underlining emphasis added.)]

Contrary to the above statement, there is no "motivation" to combine Tanaka with Sorensen because Tanaka is a patent directed to an "INFRARED IMAGING DEVICE AND INFRARED IMAGING SYSTEM USING SAME" as its title indicates and Sorensen is a patent directed to a "METHOD OF DEPOSITING A THIN FILM USING AN OPTICAL PYROMETER" as its title indicates.

In particular, in the "Field of the Invention" section, Tanaka recites (at col. 1, lines 11-19) in relevant part:

> The present invention relates to an infrared imaging device and an infrared imaging system using such an infrared imaging device, and more particularly to an infrared imaging device which includes a detector comprising a thermocouple, a bolometer, or the like and a scanner comprising a charge-coupled device (CCD) or the like, and an infrared imaging system for outputting an image signal which is detected by such an infrared imaging device. [(Emphasis added.)]

Furthermore, in the "SUMMARY OF THE INVENTION" section, Tanaka recites (at col. 2, lines 37-44) in relevant part:

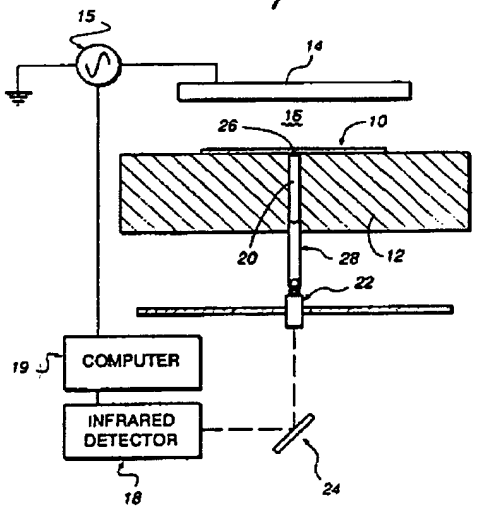
> It is therefore an object of the present invention to provide an infrared imaging device which is capable of avoiding a charge overflow that would otherwise cause all pixels to fail even when a thermocouple is broken, and hence which can be manufactured with a high yield, and an infrared imaging system for outputting a high-quality image signal by complementing image data from a defective pixel with image data from surrounding pixels based on an image signal detected by such an infrared imaging device. [(Emphasis added.)]

Bearing the foregoing recitation in mind, it is noted that not even a single "pixel" or "an infrared imaging system for outputting a high-quality image signal by complementing image data from a defective pixel" (emphasis added) is discussed in the Sorensen patent. In fact, the Sorensen

patent is directed to an entirely different and unrelated (*i.e.*, non-analogous) area of art for reasons noted herein. That Tanaka is unrelated non-analogous art as compared to the disclosure of Sorensen is readily apparent upon even a cursory review of the Sorensen patent for the reasons noted below.

The disclosure of the Sorensen patent is directed to the measurement via an infrared detector of the temperature at the backside of substrate 10 shown in FIG. 1 thereof. For convenience, the relevant FIG. and language from Sorensen is reproduced below.

Fig. 1



The relevant text relating to FIG. 1 (of Sorensen reproduced above) is provided below:

> FIG. 1 illustrates a preferred embodiment of the present [Sorensen] invention. The illustrated system is configured so that thin film deposition can begin, with a deposition substrate 10 disposed on the surface of a susceptor 12 and adjacent and parallel to an RF (radio frequency) electrode 14. The deposition substrate 10 may be a piece of glass being processed to form a liquid crystal display device. [(Sorensen at col. 4, lines 13-19; emphasis added.)]
>
> * * *
>
> In the course of operation, new deposition substrates 10 are transported from a preheat chamber (not shown) to the susceptor 12 by a transport robot. The temperature of the deposition substrate 10 falls as the substrate is transported from the preheat chamber to the surface of the susceptor 12 and the deposition substrate 10 must be (re-)heated to an appropriate temperature before deposition can begin. Deposition systems in accordance with the present invention include a temperature measurement system for monitoring the temperature of the deposition substrate 10. In this way, the substrate can reliably be heated to an

> appropriate deposition temperature before a deposition process begins. [(Sorensen at col. 4, lines 34-45; emphasis added.)]

The clear import of the foregoing Sorensen disclosure is that Sorensen is concerned with "monitoring the temperature of the deposition substrate 10" during plasma vapor deposition and controlling that temperature. Additionally, the Sorensen patent recites in its "BACKGROUND OF THE INVENTION" section (at col. 1, lines 15-17, 28-30 and 34-37) in relevant part:

> Modern liquid crystal displays, such as the active matrix liquid crystal displays used in some portable computers, are formed by the deposition of thin films on a glass substrate. [(Emphasis added.)]
>
> * * *
>
> Deposition of thin films of semiconductors, insulators and metals on glass substrates is highly sensitive to the temperature of the glass deposition substrate. [(Emphasis added.)]
>
> * * *
>
> Accordingly, it is important to maintain the deposition substrate at an appropriate temperature, as well as to maintain a uniform temperature across the surface of the deposition substrate. [(Emphasis added.)]

The foregoing Sorensen language emphasizes the importance of temperature monitoring (and control of the same) at the substrate during deposition. Furthermore, in the Sorensen also recites (at col. 3, lines 5-12) in relevant part:

> In accordance with another aspect of the present invention, a method of depositing thin films includes the steps of transporting a deposition substrate to the surface of a heated susceptor and heating the deposition substrate to a target temperature. Radiation from the deposition substrate is collected and the apparent temperature of the deposition substrate is determined from the infrared radiation emitted by the deposition substrate. [(Emphasis added.)]

From the foregoing text recited in Sorensen along with its accompanying FIG(S)., it is apparent that the Sorensen disclosure is directed to maintaining a constant regulated temperature of substrate 10 (which may be glass used to make liquid crystal displays) during plasma vapor deposition on the face of substrate 10 facing RF (radio frequency) electrode 14 as depicted in FIG. 1 (of Sorensen). The temperature of substrate 10 is measured from the infrared emissions naturally coming off of the backside (*i.e.*, that side of substrate 10 in contact with susceptor 12 – *e.g.*, an aluminum block type holder for substrate 10) of substrate 10 that are captured at

"INFRARED DETECTOR" 18 via window 22 and via mirror 24. See FIG. 1 of Sorensen reproduced above.

By contrast, Tanaka is directed to "an infrared imaging system for outputting a high-quality image signal by complementing image data from a defective pixel with image data from surrounding pixels based on an image signal detected by such an infrared imaging device." Emphasis added. See Tanaka at col. 2, lines 37-44 reproduced above. Particular attention should be given to the fact that Tanaka discloses use of an "infrared imaging system" which complements "image data from a defective pixel."

Again by contrast, Sorensen is directed to a way of measuring (and controlling) the temperature at the backside of substrate 10 – where Tanaka's "complementing image data from a defective pixel" is irrelevant. Therefore, Tanaka is non-analogous art with respect to Sorensen. There is absolutely no motivation to combine Tanaka (imaging system) with Sorensen (controlling and measuring temperature from the backside of substrate 10). Even if combined, the imaging system of Tanaka would likely be destroyed in the plasma deposition chamber of Sorensen operating at an elevated temperature of the susceptor, taught by Sorensen to be maintained at between about 300-400 °C. Sorensen recites (at col. 4, lines 27-33) in relevant part:

> The thin film deposition system preferably employs a massive aluminum block as the susceptor 12 to heat the substrate 10 to an appropriate temperature for deposition to occur. Preferably, the temperature of the susceptor 12 is heated to a deposition temperature of between about 300° C to 400° C and the susceptor temperature is maintained to within about ±1° C. [(Emphasis added.)]

In view of the foregoing, Applicant respectfully submits that (1) Tanaka is non-analogous art with respect to Sorensen and Applicant's claimed invention; (2) there is no motivation to combine Tanaka with Sorensen; (3) even if combined, the imaging system of Tanaka would fail in the plasma deposition chamber environment disclosed in Sorensen; (4) without appreciation of Applicant's own invention, there has been an unsuccessful attempt to use impermissible hindsight reconstruction to combine Tanaka with Sorensen; (5) as acknowledged in the Final Office Action, Sorensen does not disclose "transmission of the infrared beam through the sampling region" and Tanaka fails to rectify that deficiency of Sorensen, and (6) even if the imaging system of Tanaka could be placed in the plasma deposition chamber of Sorensen, it would be placed on the backside of substrate 10 – and as such, arguably any infrared beam would not pass through substrate 10. As a corrolary, even if, arguably, the Tanaka type

imaging system could survivably operate in the plasma deposition chamber of Sorensen, there is certainly no detail provided in Tanaka and/or Sorensen as to how one would get an "imaging system" like that of Tanaka to work to accomplish the plasma vapor deposition "temperature monitoring and control" (at substrate 10) of Sorensen – let alone – how one would workably arrive at Applicant's claimed invention (rejected under 35 USC §103) without impermissible hindsight reconstruction.

Therefore, Applicant respectfully requests reconsideration and withdrawal of the rejection of claims 1-5 under 35 USC §103 over Sorensen in view of Tanaka. Applicant respectfully requests a written indication of the allowance claims 1-5 together with the acknowledged allowance of claims 6-10 (if re-written in independent form – as has been done by the current claim amendments noted herein).

CONCLUSION

The claims are now in proper form and condition for allowance. Favorable action is hereby requested. If any issues remain, incident to the formal allowance of the application, the Examiner is requested to contact the undersigned attorney at (919) 419-9350 to resolve same, so that the patent on this application can be issued at the earliest possible date.

Respectfully submitted,

Ajay Pathak 4/14/06

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Enclosure:
Authorization form to charge credit card for one (1) additional independent claim in the amount of $200.00

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